

Cell Cycle and Mitosis Webquest

Name _____

Prokaryotic Cell Division:

Go to the following sites to learn about prokaryote cells:

<http://www.cellsalive.com/cells/bactcell.htm>

http://en.wikipedia.org/wiki/Binary_fission

1. Name three ways prokaryote cells differ from eukaryote cells (name characteristics of the prokaryote cells):

- _____
- _____
- _____

2. Draw a prokaryote cell

Prokaryote cells use a process called binary fission to divide. Go to the following site for the definition of binary fission:

<http://www.emc.maricopa.edu/faculty/farabee/biobk/BioBookglossB.html#binary%20fission>

3. Write the definition of binary fission: _____

Watch the animation on binary fission:

<http://www.emc.maricopa.edu/faculty/farabee/biobk/BioBookmito.html> and click on "Prokaryotic Cell Division"

4. Describe what you saw in the animation. How does binary fission work:

Eukaryotic Cell Division:

There are several reasons for the cell to divide. Two reasons are shown at the following website:

<http://plaza.ufl.edu/alallen/pgl/modules/rio/stingarees/module/what.html>

5. Name the two reasons shown for cell division.

- _____
- _____

There are several parts of the cell involved in cell division. Click on the parts shown at the following site and read what they do.

<http://plaza.ufl.edu/alallen/pgl/modules/rio/stingarees/module/index.html>

6. List the four organelles involved in cell division.

- _____
- _____
- _____
- _____

DNA can take many forms. When the cell is resting, it takes the form of chromatin. Look at chromatin in the following site:

http://www.cgl.ucsf.edu/chimera/ImageGallery/entries/large_images/chromatin3-large.png

7. Describe the appearance of chromatin? _____

When the cell needs to divide, the DNA must coil up tightly into chromosomes. When DNA has not copied itself, the chromosomes will only have one strand. These strands are called chromatids. After DNA replicates, each strand (chromatid) has a twin that is attached to it. These pairs of twin chromatids are called sister chromatids. Sister chromatids are connected by a centromere. See what chromatids and sister chromatids look like on the following site:

<http://library.thinkquest.org/28751/review/division/1.html>

8. Draw and label a picture of the sister chromatids and the centromere in space provided.

Stages of Mitosis:

Go to the following website:

<http://www.cellsalive.com/mitosis.htm>

**On the left side of the screen is a navigation bar, click on the link to “MITOSIS”. View the animation and read the text below the animation on this page.

9. List the stages of mitosis (Notice – there’s an extra phase here...”prometaphase” – sometimes that is added as an “in-between” phase between prophase and metaphase. In my class you are only responsible for knowing PMAT)

- _____
- _____
- _____
- _____

10. In which stage does each of the following occur:

Chromatin condenses into chromosomes

Chromosomes align in center of cell.

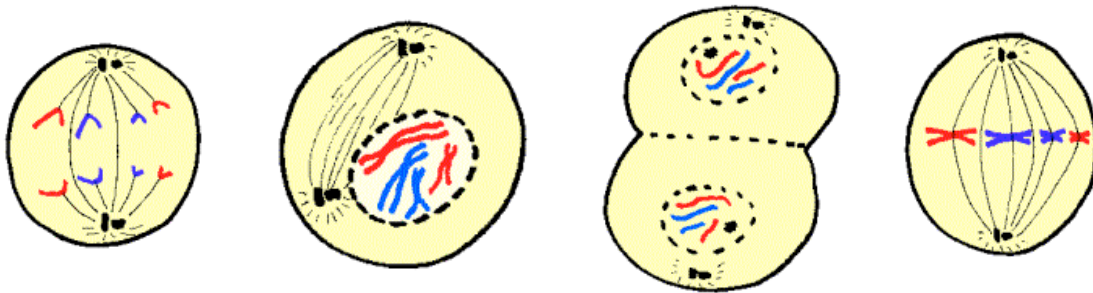
Longest part of the cell cycle.

Nuclear envelope breaks down.

Cell is cleaved into two new daughter cells.

Daughter chromosomes arrive at the poles.

11. Identify the stages of mitosis in these cells:



Onion Root Tip - Online Lab Activity:

http://www.biology.arizona.edu/cell_bio/activities/cell_cycle/cell_cycle.html

*Read the introduction, then click the “next” button.

*Check out the different phases & read them & hit “next”.

*Read the “assignment” then hit “next”

*You will have 36 cells to classify. When you're finished, record your data in the chart below.

| | Interphase | Prophase | Metaphase | Anaphase | Telophase | Total |
|------------------|------------|----------|-----------|----------|-----------|-------|
| Number of cells | | | | | | 36 |
| Percent of cells | | | | | | 100% |

(calculate percentage: number of cells divided by total cells x 100)

12. What do you notice about the stages from your calculations in the table?

13. What did you notice about the difference between Interphase & Prophase?

Complete the following:

<http://www.quia.com/rr/89527.html>

1. Press “Start” on Rags to Riches game!!

2. Answer the questions to gain \$\$!!

3. You must at least make \$250,000.

4. Be careful because if you answer incorrectly, you will have to start over!

For an overview of what Mitosis looks like, go to the following site and watch the animation:
<http://www.johnkyrk.com/mitosis.html>

Draw, label and color each phase and write down the things that happen in each one below: